

REMARKS

Reconsideration of the instant application is respectfully requested. The present amendment is responsive to the Office Action of December 14, 2004, in which claims 1-15 are presently pending. As an initial matter, claims 8, 9, 11-13 and its dependents are objected to under 37 CFR 1.75(c) as being in improper form as referring to itself. In addition, the claim numbering of the electronically filed application is objected to for using only the "c1", "c2", etc. sequence.

With regard to the art of record, claims 1-3, 5, 7 and 10 are rejected under 35 U.S.C. §102(c) as being anticipated by U.S. Patent Publication 20020098676 of Ning, et al. (Ning '676). Claims 4 and 6 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Ning '676, in view of U.S. Patent 6,709,874 to Ning, et al. (Ning '874). In addition, claims 1 and 10 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent 6,351,408 to Schwarzl, et al., in view of U.S. Patent Publication 20030234449 of Aralani, et al.

Claims 8, 9, and 11-15 have not been examined on the merits for the reasons indicated above. For the following reasons, it is respectfully submitted that the application is now in condition for allowance.

Each of the presently pending claims has been amended so as to include a specific claim number associated therewith, in addition to the automatic [c1], [c2], etc., sequencing automatically provided by electronic filing software. Furthermore, claims 8, 9, and 11-15 have been amended to correct the dependencies thereof as a result of typographical errors in the filing of the original specification. As such, the objections to the claims under 37 CFR 1.75(c) have been overcome, and it is respectfully requested that the same be withdrawn.

However, with regard to the §102 and §103 rejections based on the art of record, the Applicants respectfully traverse the same for the reason that none of the cited references (either alone or in combination) teach or suggest a *hardmask layer that forms a self-aligning contact between a magnetic stack layer and an upper metallization level formed above MTJ stacks*, as is provided for in each of the pending claims. The Examiner's rejections based on the Ning references and the Schwarzl/Aratani references are addressed in turn as follows:

Ning '676/Ning '874

On page 3 of the present Office Action, the Examiner takes the position that Ning '676 defines "a conductive hardmask (240) ...over said magnetic stack layer..., wherein said hardmask forms a self-aligning contact (defined by opening portion 250) between said magnetic stack layer and an upper metallization level (252)...". However, the Applicants respectfully submit that this cannot in fact be the case, since the portions of the hardmask 240 over the MTJ stacks in Ning are removed during the formation of the upper level trenches (i.e., vias 250). This is most clearly illustrated by a comparison between Figures 4 and 5, as well as in paragraph [0034] of the Ning '676 publication. Thus, by the time the upper level conductive material 252 and liner material 256 are formed in the vias 250 and atop the MTJ stacks 218, the hardmask 240 is no longer present. Therefore, the hardmask layer 240 does not serve as a self-aligning contact between the magnetic stack layer and the upper metallization level as is presently claimed. Accordingly, both the §102(e) and §103(a) rejections based on the Ning references have been overcome.

Schwarzl/Aratani


As is the case with the Ning references, neither Schwarzl nor Aratani (alone or in combination) teaches that the hardmask forms a self-aligning contact between a magnetic stack layer and an upper metallization level. The Examiner has already acknowledged

this with respect to Schwarzl, on pages 4-5 of the Office Action. With regard to the Aratani reference, the Examiner indicates that layer 15a is a conductive hardmask that forms a self-aligning contact between a magnetic stack layer and an upper metallization level 18a. However, an inspection of the Aratani reference plainly reveals that layer 15a is in fact a photoresist layer, not a conductive hardmask layer (see Aratani, paragraph [0154]). Moreover, even if layer 15a could be construed as a conductive hardmask layer, it is removed prior to the formation of the upper metallization level 18a, as shown in Fig. 8B of Aratani. Thus, layer 15a does not serve a self-aligning contact between the magnetic stack layer and the upper metallization level as is presently claimed. Accordingly, the §103(a) rejections based on the Schwarzl/Aratani references have been overcome.

For the above stated reasons, it is respectfully submitted that the present application is now in condition for allowance. No new matter has been entered and no additional fees are believed to be required. However, if any fees are due with respect to this Amendment, please charge them to Deposit Account No. 09-0458 maintained by Applicant's attorneys.

Respectfully submitted,
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